

STUDY PROTOCOL

Interventions at presentation and discharge for patients with acute exacerbation of chronic obstructive pulmonary disease to reduce unnecessary admissions and readmissions: A scoping review protocol

Rachel MacDonell  | Orla Woods | Lucia PrihodovaRoyal College of Physicians of Ireland,
Dublin, Ireland**Correspondence**Rachel MacDonell, Royal College of
Physicians of Ireland, Dublin, Ireland.
Email: rachelmacdonell@rcpi.ie**Funding information**This work was supported by funding from
Clinical Strategy and Programmes, Health
Service Executive Ireland.**Abstract****Aim:** This scoping review will gather existing evidence on specific interventions at presentation and discharge which aim to standardize care and/or reduce unnecessary admissions and/or readmissions to hospital for patients presenting with acute exacerbation of chronic obstructive pulmonary (airways) disease.**Design:** Scoping review of relevant literature from January 2000–March 2019.**Methods:** Database searches for primary evidence in peer-reviewed journals will be conducted electronically using Web of Science, EMBASE (Elsevier) and PUBMED. Eligibility criteria will include hospital-based interventions for presentations of acute exacerbation of chronic obstructive pulmonary disease with outcomes specific to standardizing care or reducing unnecessary admissions or readmissions. Abstract, full-text screening and data extraction will be completed independently by a panel of expert reviewers.**Results:** We aim to identify current interventions and improvement approaches in acute exacerbation of chronic obstructive pulmonary (airways) disease care that have an impact on admission and discharge processes or readmissions. Recommendations as a result of this review will aid the design and development of future improvement intervention.**KEYWORDS**

AECOAD, AECOPD, COAD, COPD, nurses, nursing, scoping review

1 | INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a common progressive lung disease which is the most prevalent respiratory disease in adults, globally (NOCA, 2017). COPD was reported as the 3rd leading cause of death worldwide in 2017 (Lozano et al., 2012; NOCA, 2018) and represents 2.7% of the total global cause-specific

disability-adjusted life year (WHO, 2018), demonstrating that this disease is a significant factor in global chronic morbidity and mortality rates. The worldwide COPD burden is predicted to increase over future decades because of continued exposure to COPD risk factors (including smoking, environmental factors such as air pollution or genetic risk) and ageing of the population (Mathers & Loncar, 2006). The World Health Organisation (WHO, 2014) has set

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a target reduction of at least 25% by 2025 in mortality rates from this disease.

When it comes to management of COPD, there is evidence supporting preventative and maintenance therapy in stable COPD (including smoking cessation, pharmacological therapy, influenza and pneumococcal vaccination, pulmonary rehabilitation and long-term oxygen therapy in chronic severe cases) and in management of an exacerbation (GOLD, 2019). Despite existing recommendations, previous studies have shown that there is significant variability in AECOPD processes of care and outcomes at a country level (Agabiti et al., 2010; Hosker, Anstey, Lowe, Pearson, & Roberts, 2007; Liaen, Henrikson, & Stenfors, 2010; Lindenauer et al., 2006; Pretto, McDonald, Wark, & Hensley, 2012; Walker et al., 2013) and internationally (Lopez-Campos, Hartl, Pozo-Rodrigues, & European COPD Audit Team, 2014).

The proposed scoping review will seek primary evidence from existing literature that relates to quality improvement (QI) initiatives in acute exacerbation of chronic obstructive pulmonary (airways) disease (AECOPD/AECOAD) care and seeks to improve patient-centred outcomes such as experience of care, standardisation of care and reduction in unnecessary admission rates. In this article, we present the protocol that will inform the methodology and framework for the scoping review.

2 | BACKGROUND

Chronic obstructive pulmonary disease is a global health issue which is described as under-recognized, under-diagnosed and under-treated (Quaderi & Hurst, 2018). A 2006 systematic review and meta-analysis reported poor prevalence measurement, with a lack of good quality data from outside Europe and North America (Halbert et al., 2006). A meta-analysis review of 123 studies representing best available evidence in publicly accessible scientific databases, published in 2015 (Adeloye, Choye, Lee et al., 2015) indicated that 227.3 million cases of COPD worldwide in 1990 had risen to 384 million in 2010; an increase of over 40%.

The mortality rate from COPD is high; in 2015, over 3.2 million people died from COPD worldwide (Chronic Respiratory Disease Collaborators, 2015) with 65 million people globally suffering with moderate or severe disease (Forum of International Respiratory Societies, 2017). Increased severity of disease and associated acute exacerbation of symptoms can result in frequent admissions and is linked to cumulative deterioration in health status, marked by poorer recovery of lung function with each recurrence (Berry & Wise, 2010) and a greater risk of mortality (Tashkin, 2006; WHO,). Studies have reported frequent readmissions, seen as high as one in five patients with AECOPD (Jencks, Williams, & Coleman, 2009).

The primary aim of AECOPD treatment was to minimize the clinical impact of the current exacerbation and to prevent subsequent deterioration events that may include readmission (Crisafulli, Barbata, Ielpo, & Torres, 2018). Published AECOPD treatment guidelines exist (GOLD, 2019; NICE, 2018) although adherence has been found to be challenging (Lodewijck et al., 2009) with clinician-reported barriers

including poor familiarity with recommendations, low self-efficacy and time constraints (Perez, Wisniveskya, Lurslurchachai, Kleinman, & Kronish, 2012). A pan-European audit of the largest dataset of prospectively collected, real-world AECOPD quality of care and outcomes data underscored gaps in quality of care in many European countries when compared with evidence-based recommendations (Hartl et al., 2016). An NHS audit further highlighted wide variation in treatment provision and outcomes for patients admitted with AECOPD (Royal College of Physicians (UK), 2017).

In Ireland, COPD is one of the most common respiratory diseases, placing a significant burden of disease on people and health services as evidenced by mortality and hospitalization rates (Irish Thoracic Society, 2018). Having the highest hospitalization rate for COPD among selected OECD countries (DOH, 2018), recommendations have been made for the Irish healthcare service to focus on strategies which aim to reduce avoidable emergency admissions for cases that could be managed in a primary care or home setting (OECD, 2016).

To address these issues, Ireland is currently undertaking steps towards expansion of an integrated model of care for chronic diseases including COPD. Furthermore, there is now an opportunity to improve aspects of care for AECOPD in Irish acute hospital settings through a commissioned COPD QI intervention to focus on the acknowledged issue of high rates of presentation, admission and length of stay in Irish hospitals for people with AECOPD. Findings of this review will inform the development of an evidence-based QI intervention in secondary care in AECOPD care aimed to reduce unnecessary or avoidable admissions and readmissions.

2.1 | Research question

What QI interventions have been reported to standardize care or reduce unnecessary admission or readmissions in AECOPD?

3 | THE STUDY

3.1 | Design

A scoping review methodology will be used to conduct this study. Unlike a systematic review, a scoping review aims for breadth and comprehensiveness, rather than depth (Arksey & O'Malley, 2005). The aim of a scoping review was to generate an overview of research undertaken on a topic and determine the range of studies that are available, summarize research results and identify evidence gaps (Wickremasinghe, Kuruvilla, Mays, & Avan, 2016). This protocol is prepared to guide the performance of the scoping review which will be undertaken and will be revised as needed. The protocol and review design will follow methodologies proposed by Arksey and O'Malley (2005), Levac, Colquhoun, & O'Brien, 2010, The Joanna Briggs Institute (2015) and PRISMA-P guidelines (Tricco et al., 2018). The review will follow the five prescribed steps of a scoping review with the sixth, optional

stage—consultation with stakeholders—not deemed relevant in this instance. Stage 1 involves development of the research question. Definition of eligibility criteria and search strategy are then completed in stage 2. In stage 3, the study selection process based on the eligibility criteria occurs. During stage 4, a data extraction framework will be developed to inform the extraction and charting of data from the included papers. Finally, data extraction results will be aggregated and summarized.

3.2 | Method

The search strategy is designed to be as extensive as possible to identify all possible eligible studies, which will be then refined according to the inclusion and exclusion criteria. The scoping review will include published primary data that can be retrieved from the following electronic databases: Web of Science, EMBASE (Elsevier) and PUBMED. The reference lists from included studies will be screened to ensure literature saturation. Reference lists of reviews found through the electronic search will be checked to ensure that relevant articles are included in the scoping review.

Studies to be included will meet the following eligibility criteria:

- Peer-reviewed, primary evidence, journal articles, published between January 2000–March 2019, English only
- Concerning adults with COPD or chronic obstructive airways disease (COAD)
- Introduced an original (or adapted) explicit intervention or implementation strategy to improve care in AECOPD or AECCOAD intervention aimed to standardize care or reduce unnecessary admissions or readmissions in acute secondary care
- Included a detailed description and explanation of the intervention or implementation strategy
- Applied in an acute healthcare setting, for example hospital or acute healthcare team intervention
- Aimed at improved outcomes in admission rates, admission avoidance, length of stay, readmission rates or time to care

The following studies will be excluded:

- Studies which refer to aetiology, physiology, environmental factors, medical treatment (including pharmacology)
- Studies which examine predictive modelling, risk assessment or economic burden or savings at societal level
- Studies which do not present an intervention or implementation strategy

The review team will use an iterative process to identify key search terms. The primary search terms will include COAD or COPD, intervention, QI, acute care, admission avoidance, prevention of readmission, admission and discharge bundles, care pathways; or variation thereof. The exact search commands are listed in the Supporting Information.

Duplicate records will be removed and then three reviewers will independently screen all titles for relevance. Following this, abstract screening will be undertaken independently by two reviewers with any discrepancies to be resolved by discussion and consensus with a third reviewer. Finally, full texts will be assessed by one reviewer against the inclusion criteria and independently by a panel of expert reviewers [in the field of respiratory medicine, nursing and academia] before a final decision regarding inclusion/exclusion will be confirmed. Any discrepancies will be resolved by discussion and consensus with a second reviewer. Reasons for excluding studies will be noted.

A data extraction template will be used to chart data from each included article. One researcher will read each article and extract relevant data. Charting will be iteratively conducted; additional categories may be identified through completion of the search and communication with review team members. One additional author will test the extraction list by applying it to 10% of studies selected randomly from the pool of studies included for full-text screening. Based on this test, items will be added or removed, to ensure the comprehensiveness of the list.

The data extraction form will include at least the following items:

- Study descriptors including
 - Author(s)
 - Year of publication
 - Origin/country of origin (where the study was published or conducted)
- Study design including
 - Aims/purpose
 - Design and methodology
 - Ethics
 - Participant characteristics including comparators
- Intervention descriptors including
 - Implementation methods and supports
 - Type and duration of intervention
 - By whom and how it was undertaken
- Measures
 - Primary and secondary outcomes
 - Methods of data collection, duration and analysis
- Results
 - Evidence of changes in primary and secondary outcomes
- Discussion
 - Evidence of author's interpretation, recommendations and limitations
- Reviewer's appraisal
 - Reflections on the intervention, methods, findings and recommendations

3.3 | Analysis

The data arising from this review will be collated and summarized quantitatively (using a simple numerical count) and qualitatively (drawing on narrative/thematic synthesis), seeking evidence for

successful interventions and implementation strategies towards standardisation of AECOPD/AECOAD care at presentation and discharge or addressing unnecessary admissions or readmissions for this condition. Data synthesis and analysis will be conducted by the authors and discussed within the review group to ensure validity and consistency of the synthesis. Due to the diversity of the interventions, a narrative approach may be used for synthesis. Due to the nature of this scoping review, an analysis of quality of included articles will not be undertaken. The merits of each included intervention and strategy will be drawn based on how each is presented. Consequently, we will conduct a thematic/narrative analysis of the results to extract the common components of the interventions and use them as a basis for identifying recurrent themes and creating recommendations for practice in the care of AECOPD.

3.4 | Ethics

This study operates with secondary findings from primary research, and therefore, no formal approval or consent is necessary. Reviewers will make an explicit declaration of conflict of interest with any of the studies included/excluded for the review.

3.5 | Limitations

Due to the nature of the proposed review as a scoping exercise and not a systematic review, the quality of the publications included will not be assessed. It is possible that more recent QI interventions outside the specified search time period protocol of January 2000 and March 2019 may be missed. The inclusion criteria for the intervention setting are limited to the acute healthcare team or environment at presentation or discharge so studies focusing on in-patient treatment or community or primary-based healthcare interventions will not be discussed. The volume of eligible publications may be limited due to seeking interventions related to QI and not all interventions in AECOP/AECOAD care.

4 | CONCLUSION

We intend to use the preceding protocol to provide an informative scoping review which will, for the first time, aim to review QI interventions which aim to reduce variation in AECOPD/AECOAD acute care at the point of presentation and discharge and reduce unnecessary admissions or readmissions.

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All those listed above as authors qualify for authorship according to the following criteria set by Nursing Open Author Guidelines:

CONFLICT OF INTEREST

Rachel MacDonell is employed by Royal College of Physicians of Ireland as Programme Manager with responsibility for a COPD

Improvement Collaborative in Ireland. Orla Woods and Lucia Prihodova are employed by the Research Department of Royal College of Physicians of Ireland. As such, none of the authors have any conflict of interest to declare.

AUTHOR CONTRIBUTIONS

All three authors have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data. RM was primarily involved in drafting the manuscript or with significant input from OW and LP revising it critically for important intellectual content. All three authors have given final approval of this version to be published. All three authors have agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ETHICS STATEMENT

Ethical approval was not necessary for completion of this work.

PATIENT CONSENT STATEMENT

Patients were not involved in the drafting of this paper.

ORCID

Rachel MacDonell  <https://orcid.org/0000-0003-3467-302X>

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